TABLE OF CONTENTS

Chapter		Page
CHAPTI	ER 1 - EXECUTIVE SUMMARY	
1.1	Background	1-1
1.2	Purpose/ Objectives	1-1
1.3	Flow, Condition and Operation Assessment	1-3
1.4	Class "A" Biosolids	1-4
1.5	Summary of Recommendations	1-4
CHAPTI	ER 2 - SOLIDS QUANTITIES AND MASS MODELING	
2.1	General	2-1
2.2	MBC Influent Solids Loading	2-1
2.3	Historic Solids Loadings from NCWRP and PLWTP	2-2
2.4	Dewatered Biosolids Production	2-3
2.5	Phase II Mass Modeling	2-5
	2.5.1 Modeling Methodology	2-5
	2.5.2 General Key Assumptions	2-5
	2.5.3 Model Results	2-7
	2.5.4 Conclusions/ Recommendations	2-8
CHAPTI	ER 3 - SOLIDS TREATMENT FACILITIES	
3.0	General	3-1
3.1	Solids Process Facilities	3-1
3.2	Description of the MBC Solids Treatment Process Facilities-General	3-3
	3.2.1 Condition Assessment- "Capacity Limiters"	3-4
	3.2.2 Facility Descriptions and Problems Identification	3-5
	Pig Retrieval Facilities	3-5
	Raw Solids Receiving	3-5
	Raw Solids Degritting	3-7
	Biosolids Thickening	3-9
	Thickened Biosolids Screening	3-12
	Thickened Biosolids Blending	3-13
	Anaerobic Digestion	3-19
	Biogas Collection and Storage	3-22
	Digested Biosolids Storage	3-24
	Centrifuge Dewatering	3-27
	Dewatered Biosolids Storage and Loadout	3-31
	Chemical Storage and Handling Systems	3-35
	Polymer Storage and Mixing System	3-38
	Dewatering Ferric Chloride Feed System	3-40
	Centrate Pumping Station	3-42

	ABLE OF CON	ITENT	'n
--	-------------	-------	----

	•	
	•	

CHAPTE	R 4 - NON-PROCESS FACILITIES	
4.1	General	4-1
4.2	Wastewater Pumping System	4-1
4.3	Odor Control Facilities	4-3
4.4	Plant Water Systems	4-6
	4.4.1 Potable Water (PW) System	4-6
	4.4.2 Process Water (PRW) System	4-7
	4.4.3 Utility (or Reclaimed) Water (UW or RW) System	4-9
	4.4.4 Other Plant Water System Problems/ Recommendations	4-9
	4.4.5 Hot Water (HW) System	4-10
	4.4.6 Chilled Water (CW) System	4-11
4.5	Stormwater Drainage (SWD) System	4-12
CHAPTE FACILIT	R 5 - ELECTRICAL AND INSTRUMENTATION/ CONTROL IES	
5.1	Electrical Facilities	5-1
	5.1.1 Electrical- General	5-1
	5.1.2 Operations Building- Area 51	5-1
	5.1.3 Digesters Complex- Area 80	5-2
	5.1.4 Centrifuge Building- Area 76	5-2
	5.1.5 Centrifuge Building- Area 76	5-2
	5.1.6 Biosolids Thickening- Area 76	5-3
	5.1.7 Wastewater Pump Station- Area 94	5-3
5.2	Instrumentation and Controls	5-3
	5.2.1 Distributed Control System (DCS)	5-3
	5.2.2 Valve Master Stations	5-4
	5.2.3 Siemens Control System	5-5
СНАРТЕ	R 6 - IMPLEMENTATION PLAN	
Imp	lementation Plan	6-1

LIST OF FIGURES

Figure No./Title

- 1-1 Metropolitan Wastewater System
- 1-2 Metro Biosolids Center Site Plan
- 2-1 MBC Overall Process Flow Diagram
- 2-2 Metro Biosolids Center (NSPF) Process Flow Diagram-1
- 2-3 Metro Biosolids Center (FIRP) Process Flow Diagram-2
- 2-4 Hydraulic Profile
- 3-1 Biosolids Screen & Blending Tank Problems Existing Condition
- 3-2 Alternative 1: Biosolids Screen & Blending Tank Problems
- 3-3 Alternative 2: Biosolids Screen & Blending Tank Problems
- 3-4 Alternative 3: Biosolids Screen & Blending Tank Problems
- 3-5 Alternative 4: Biosolids Screen & Blending Tank Problems
- 3-6 Alternative 5: Biosolids Screen & Blending Tank Problems
- 3-7 Alternative 6: Biosolids Screen & Blending Tank Problems
- 3-8 Alternative 7: Biosolids Screen & Blending Tank Problems
- 3-9 Alternative 8: Biosolids Screen & Blending Tank Problems
- 3-10 Alternative 9: Biosolids Screen & Blending Tank Problems
- 3-11 Biosolids Loadout Facility Upgrade Alternatives
- 3-12 Polymer Systems Flow Diagram
- 4-1 MBC Plant Water Systems Tie-Ins Flow Diagram

Figures 1 thru 18: Process Flow Diagrams (See Appendix B)

LIST OF TABLES

Table No./Title

- 1-1 Draft 2005 MWP's Recommended New MWWD Facilities
- 1-2 Major Upgrade Projects for MBC
- 2-1 NCWRP and PLWTP Projected Average and Peak Solids Flow Rates
- 2-2 Key Assumptions in Solids Production Projections
- 2-3 NCWRP Raw Biosolids Sent to MBC
- 2-4 PLWTP Digested Biosolids
- 2-5 MBC Dewatered Biosolids Projections
- 2-6 MBC Biosolids Cake Production (Average)
- 2-7 MBC CAMP Mass Balance Model Parameters
- 2-8 Final Recommendations on MBC CAMP Projects
- 3-1 FIRP/ NSPF Process Unit Sizing Criteria
- 3-2 Number of Process Units Required
- 3-3 Alternative Solutions to Screens and Blend Tanks Problems
- 3-4 Biosolids Truck Loadout Alternatives
- 3-5 Chemical Application at MBC

- 6-1 Major Upgrade Projects for MBC
- 6-2 Projects Proposed for C.I.P Funding Allocation
- 6-3 Projects Proposed for Annual O&M Budget Funding

APPENDICES

Appendix A - Table A-1 Summary of Problems and Recommendations for MBC Upgrades

Appendix B - Process Flow Diagrams

- Figure 1: Process Flow Diagram Raw Solids Receiving/ Storage
- Figure 2: Process Flow Diagram Grit Removal
- Figure 3: Process Flow Diagram Biosolids Thickening
- Figure 4: Process Flow Diagram Biosolids Screening
- Figure 5: Process Flow Diagram Thickened Solids Blending Storage
- Figure 6: Process Flow Diagram Anaerobic Digestion
- Figure 7: Process Flow Diagram Biogas Compressors & Flares
- Figure 8: Process Flow Diagram Digested Biosolids Storage
- Figure 9: Process Flow Diagram Dewatering
- Figure 10: Process Flow Diagram Dewatering
- Figure 11: Process Flow Diagram Dewatering Biosolids Storage
- Figure 12: Process Flow Diagram Dewatered Biosolids Loadout
- Figure 13: MBC Odor Control-Foul Air Flow Diagrams
- Figure 14: Utility Water Low Pressure (UWLP) System Flow Diagram
- Figure 15: Potable Water (PW) System Flow Diagram
- Figure 16: Process Water (PRW) System Flow Diagram
- Figure 17: Heating Hot Water System Flow Diagram
- Figure 18: Chilled Water System Flow Diagram

Appendix C - Brown and Caldwell's Technical Memorandum "MBC CAMP – EQUPMENT UPGRADE AND EXPANSION"

ACRONYMS AND ABBREVIATIONS

AHU Air Handling Unit

APCD Air Pollution Control District AVAR Air-Vacuum and Air Release

Avg Average

BOD Biochemical Oxygen Demand

CAMP Capacity, Condition and Operation Assessment and Master Plan

cf Cubic feet

cfm Cubic feet per minute

CN Centrate

COGEN Co-Generation Facility

CW Chilled Water

CWP Clean Water Program

DBST Digested Biosolids Storage Tanks
DCS Distributed Control System

DF Digester Feed

DPU Data Processing Unit
DSL Dewatered Sludge
dtpd Dry tons per day
DWT Dewatering Transfer
FC Ferric Chloride

FIRP Fiesta Island Replacement Project

gpm Gallons per minute

hp Horsepower
HW Hot Water
I/O Input/ Output
LWL Lower Water Level

MBC Metropolitan Biosolids Center

MBC Metropolitan biosolius Cer

MCC Motor Control Center
M&E Metcalf & Eddy
MER Mass Emission Rate
mgd Million gallons per day
MPSG Main Plant Switchgear
mt/yr Metric tons/ year

MVWTP Mission Valley Wastewater Treatment Plant

MWP Metropolitan Wastewater Plan NCRSP North City Raw Sludge Pipeline NCWRP North City Water Reclamation Plant

NPDES National Pollution Discharge Elimination System

NSPF North Sludge Processing Facility
NWRP Northern Water Reclamation Plants

OC Odor Control

OCS Odor Control System

OF Overflow

O&M Operations and Maintenance OPRA Ocean Pollution Reduction Act

PE Polymer Emulsion

PLC Programmable Logistics Control

PLWTP Point Loma Wastewater Treatment Plant

PM Polymer Mannich ppd Pounds per day

PRV Pressure Regulating Valve

PRW Process Water
PVC Polyvinyl Chloride
PW Potable Water
RW Reclaimed Water

SBWTP South Bay Wastewater Treatment Plant

scf/lb Standard cubic feet/ pound

SDAPCD San Diego Air Pollution Control District

SDGE San Diego Gas and Electric

SSPF Southern Sludge Processing Facility

SWD Storm Water Drainage

TBOD Total Biochemical Oxygen Demand

TDH Total Dynamic Head
TSL Thickened Sludge
TSS Total Suspended Solids

UPS Uninterruptible Power Supply

UW Utility Water

UWLP Utility Water Low Pressure VFD Variable Frequency Drive VSS Volatile Suspended Solids

WC Water Column
WD Water Department
wtpd Wet tons per day

WWPS Wastewater Pump Station